

POST

This is Rochester.

mind your

☀ THOUGHTS AND FEELINGS, WE TEND TO BELIEVE, ARE ISOLATED TO THE NECK UP, THOUGH SCIENCE HAS BEGUN TO PROVE THEY PRODUCE CHAIN REACTIONS THROUGHOUT THE BODY. BUT HOW? WE HEAR, WE READ, WE TALK SO MUCH ABOUT THE MIND-BODY CONNECTION, BUT DO WE KNOW WHAT IT MEANS?

☀ EXPERTS SAY THE BODY IS COMPRISED OF INTELLIGENT SYSTEMS THAT WORK TOGETHER WITH CONSCIOUSNESS AND SUBCONSCIOUSNESS TO REGULATE BODILY FUNCTIONS ON MULTIPLE LEVELS OF OUR BIOLOGY. CHRONIC NEGATIVE THINKING, OVER TIME, CAN INFLUENCE THESE NORMALLY SELF-HEALING FUNCTIONS OF THE BODY IN NEGATIVE WAYS, BY TRIGGERING DISEASE, FOR EXAMPLE, OR WEAKENING THE BODY'S IMMUNE SYSTEM. ☀ BUT TO MANY THIS SOUNDS MORE LIKE HOCUS POCUS, NEW AGE BLAH BLAH THAN IT DOES RIGOROUS SCIENCE. ☀ TO OTHERS THE DISTINCTION BETWEEN MIND AND BODY IS IRKSOME. WE DON'T TALK ABOUT THE LUNG-BODY CONNECTION, FOR EXAMPLE, OR THE COLON-BODY CONNECTION.

☀ **WHY THEN IS THERE THIS PERSISTENT DISTINCTION BETWEEN MIND AND BODY?**

mind

HOW
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ATTITUDE

BY MARY STONE



ONE

REASON, EXPERTS POINT OUT, IS BECAUSE SCIENTISTS, AND PERHAPS HUMANKIND IN GENERAL, TEND TO LABEL SYSTEMIC THINGS WITH CATEGORICAL TERMS. TO UNDERSTAND THE WHOLE, WE BREAK IT INTO MANAGEABLE PARTS, BUT IN PRACTICE WE TOO OFTEN FORGET THE WIDER PERSPECTIVE OF THE WHOLE, EXPLAINS LAURENCE SUGARMAN M.D., A PEDIATRICIAN AND DIRECTOR OF THE CENTER FOR APPLIED PSYCHOPHYSIOLOGY AND SELF-REGULATION AT ROCHESTER INSTITUTE OF TECHNOLOGY.

To Sugarman, the definition of the mind includes all the interaction between the brain and body. The brain, after all, is inside the body, he is loathe to remind people. Referring to the brain and body as separate is like talking about apples and apple cores, he says.

“It makes me a little crazy when people say mind-body because it’s almost as if with a wink and nod they’re saying, ‘I believe they’re all together, but I’m going to separate them with a hyphen anyway and be redundant,’” Sugarman says.

It’s true that we need labels, he says, but the language should not let us presume to know how big the total is when we actually do not. The categories help us expand our understanding of the mind and body, but limit it at the same time.

HOW EMOTIONS AND THOUGHTS AFFECT THE BODY

Sugarman’s field of study, psychophysiology, is a large piece of the pie, but there are many counterparts. Epigenetics and psychoneuroimmunology are two of them, the last of which was coined by University of Rochester professor Dr. Robert Ader, a pioneer in the field.

Ader, who spent some 50 years at U of R, turned the medical establishment on its head in the 1970s by demonstrating that mental processes can affect the body’s immune system.

IMMUNE SYSTEM

The field of psychoneuroimmunology, which can be defined as the study of the interaction between psychological processes and the body's nervous and immune systems, has since demonstrated how stress—emotional, situational, and otherwise—can worsen and sometimes trigger illness. It's a concept Western medicine previously considered little more than an old wives' tale.

Like Sugarman, Ader, who died in 2011, believed the mind and body to be one and the same. The mind's reaction to medication, also known as the placebo effect, was one example. His breakout experiment, which originally was meant to study taste aversion conditioning in rats, demonstrated how the immune system could learn, just like the mind. Not only that, but the immune response acted in concert with the mind, showing that contrary to popular belief, it was not an autonomous system.

In the experiment, rats drank different volumes of a saccharin solution and at the same time were injected with an immunosuppressive drug to induce stomach pain. The rats learned to avoid consuming the solution.

But when Ader stopped giving the rats the drug, and continued to give them the saccharin solution, the rats not only tried to avoid drinking the solution, some of them died.

And the magnitude of the rats' avoidance of the drink, Ader found, was directly related to the volume of solution they had consumed. The rats were, in

effect, physiologically experiencing the negative effects of something that wasn't there, showing that the immune system does not operate independent of the brain, as previously thought.

Today it is known and accepted that there are neurotransmitters beyond the brain—in the gut, for example—explains Mary Claire Wise



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M.D., a general care practitioner in Rochester. “And they are probably in other places that we don’t even know about yet,” Wise adds.

GENETICS

Epigenetics too, she says, demonstrates the integrative aspects of mind and body. “We have these proteins that actually can control genetic expression. Definitely, I think that our thoughts, emotions, feelings, and stress can affect those.”

Epigenetics, for its part, reversed the prevailing belief that DNA expression is fixed. Epigenetics, loosely, can be described as how our internal environment, including thoughts and emotions, and external, such as diet and exercise, interact with our genes. While it is true that DNA sequence is fixed, the epigenome, which sits on top of the genome, can alter the way genes behave by activating or silencing them.

“People who don’t eat any fruits and vegetables are more likely to have disease than people who eat fruits and vegetables, and it’s because of epigenetics,” Wise explains. “The genes for disease are being turned on because you’re not getting what you need to support the genes for health.”

“We have tons and tons of genes, and not all of them are expressed at one time. Only a very small percentage of our genes are being expressed,” Wise adds. “And what’s in our environment, emotionally, and in terms of our diets and sleep and stress and all of that, affects genetic expression.”

Not only can those factors affect our genetic expression but also that of our children and grandchildren. In an experiment published two years ago it was shown that the babies of mice had inherited fear from their fathers. While the actual mechanism still is not known, it is surmised that epigenetics was behind the inherited emotion.

In the study, researchers trained male mice to fear the cherry-like scent of acetophenone by delivering small electric shocks to them every

ENDOCRINE SYSTEM

In addition to affecting how our DNA is expressed and how our immune and gastrointestinal systems function, the endocrine system likewise can be disrupted from negative or stressful emotions and thoughts. Replaying emotionally charged memories or emotions in the mind can trigger a fight-or-flight response in the body as if the perceived threat was occurring again, in real time.

Located on top of the kidneys, the adrenals are glands that produce and release hormones. During a perceived threat—actual, remembered or imagined—the adrenal glands receive nerve and chemical signals from cells in the hypothalamus, which release epinephrine into the bloodstream. Cortisol is released shortly thereafter, resulting in, among many other reactions, an increase in blood pressure and blood sugar levels and a suppression of the immune system.

After prolonged bouts of stress, be they situational, emotional or physical, the adrenal glands produce too much cortisol and later fail to keep up with the body’s normal daily demand for cortisol.

The result can initiate a domino effect in the endocrine system: The thyroid’s ability to function is reduced, often leading to inflammation, Wise says.

“There are a lot of consequences of that. Blood sugar levels increase, which increases appetite,” Wise says. “People, when they’re emotionally distraught, especially in our culture, people tend to eat the wrong things. They tend to go for sugar, eggs and pies, and that actually compounds things because the sugar makes the adrenal fatigue even worse.”

Rekha Shrivastava, a Rochester psychotherapist and stress management educator, says a perceived state of panic usually triggers negative thoughts, often in the form of self-talk, which fans the flame of the experience. Scary scenarios and other images converge to make it worse.

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time they were exposed to it. They began to associate pain with the scent, shuddering in the presence of the acetophenone even when the shocks were not administered.

That reaction, it was observed, was passed on to the mice’s pups. Even though the pups never had smelled acetophenone or experienced the electric shocks their fathers did or even observed their fathers’ reaction to the scent, they still showed fear when they were exposed to the fragrance. In addition, the babies of those pups shared the same fear to that scent but not other scents.

Previously it was thought that the sequence of DNA was responsible for inherited traits. Experiments like this show it is also the way DNA is activated—or not—that can affect future generations.

“This self-talk often stems from our belief system about events, persons, and environment,” Shrivastava says. Physiologically, they result in a rapid heart beat, constriction in major muscle groups, high blood pressure, diversion of blood circulation from major muscle groups to smaller ones, among other effects. Many people experience irritable bowel syndrome in this state, she adds.

“It is interesting to note that if this becomes a habitual pattern and chronic, the cumulative effect can give rise to several stress related illnesses, for example, ulcers, high blood pressure, cardiovascular diseases, stroke, chronic back pain, constipation, diarrhea, insomnia, headache, stiff neck, weight gain, weight loss,” Shrivastava says.

BIOCHEMICALS

Dr. Candace Pert, who died last year, was a neuroscientist, pharmacologist and former chief of brain biochemistry at the National Institute of Mental Health. The hallmark of her work was the

relationship between emotions, peptides and their receptors.

Peptides, which are strings of amino acids (that look much like pearls strung on a necklace), can be released from a feeling, or even the memory of a feeling or intense experience, Pert explained in her writings. But first, the experience activates the brain's limbic system, the seat of most of our emotional life, where long-term memory is stored and memories are made.

The experience, emotion, or memory gets filtered and categorized with other similar information; subsequently it produces the release of molecules, such as hormones or peptides.

Once released, these peptides seek out their corresponding receptor on a cell, somewhere in the body, encrusted among thousands of other receptors waiting for their matching peptide. According to Pert, these peptides and receptors are the biochemicals of emotion.

In her book "Molecules of Emotion: The Science Behind Mind-Body Medicine," Pert explains that once the message penetrates the cell, the state of the cell can change drastically.

"A chain reaction of biochemical events is initiated as tiny machines roar into action and, directed by the message of the ligand (such as a peptide), begin any number of activities—manufacturing new proteins, making decisions about cell division, opening or closing ion channels, adding or subtracting energetic chemical groups such as the phosphates—to name just a few ...

"On a more global scale, these minute physiological phenomena at the cellular level can translate to large changes in behavior, physical activity, even mood," Pert wrote. They can also leave us more or less susceptible to a virus or other illness.

Emotions, thoughts, and memories are not isolated to the brain, but according to Pert and others, they and the effects they produce are woven throughout the mind-body.

Someone who is having ongoing problems at a job, with their partner or spouse, likely will experience physiological consequences across multiple systems that cumulatively can gravely affect health.

Problems in a relationship might bring up memories of past stresses and behaviors.

"It's difficult for them to process; their self-worth somewhat decreases. Something in their routine is going to decrease," Sugarman says. "They're going to get less exercise, sleep less, drink more coffee and more alcohol, whatever. They're going to start self-medicating more. They're going to say, 'I really need that bag of Cheetos now,' or whatever it is. Those things are going to threaten—there's the critical word—their homeostasis, their physiological balance.

"And it will have significant effect, because the hormones and neuropeptides and cells, the chemicals that are called cytokines, which is how cells talk to each other, are going to be altered by that," Sugarman adds. That's going to affect the competency of the immune system. It could also affect their ability to focus, maybe driving or other aspects of life become difficult, he explains. "All of these things are going to conspire in some way to cause them to have gastrointestinal problems or gastritis or engage in fighting off the germ that's been there all along while waiting for them to have a hole in their immune system that can make them sick."

THOUGHTS, FEELINGS, BELIEFS

From the far-reaching consequences they elicit, persistent negative thoughts, feelings, memories, beliefs, and experiences are not free. We pay for them with ill health in myriad ways.

People believe that the brain is where we think, but really, Wise says, we think with our whole body. That's especially true for emotions. Anger, for example, is a primary risk factor for heart disease, she says, alongside smoking, obesity, and high cholesterol.

"There are more heart attacks on Mondays than any other day of the week," Wise says. "What does that tell you?"

"People who are depressed often have anger that they haven't expressed," Wise says. "If you have a lot of stressful events in a short period of time, you're more likely to have a physical, medical diagnosis."

The effects of intense grief, for example, are documented, she says.

"When a husband or wife dies, there's a 50 percent mortality for the other partner of one year, which means the chances of the other partner dying is 50 percent. So, if they make it through that first year, they may go on to live a normal life span, but there is a high incidence of mortality for the surviving spouse," Wise says.

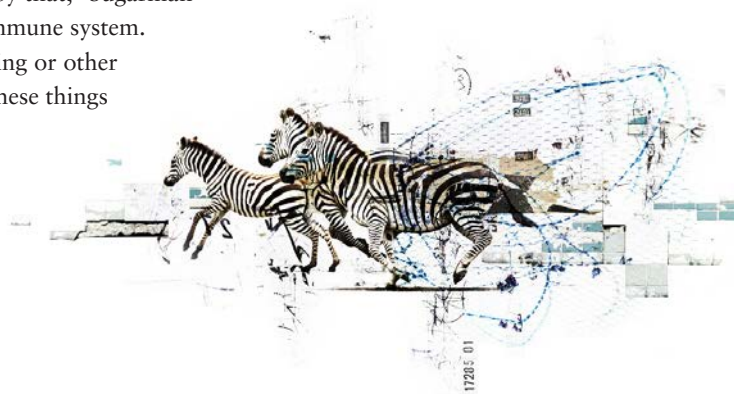
Chronic negative thoughts and feelings, psychologists say, often stem from unresolved painful events or unexpressed emotions. Limiting negative thoughts and feelings is as important to health as limiting trans fats in one's diet or pesticide exposure in the environment—but probably a lot harder to do.

Wise's husband, Joseph Carlino, is a psychotherapist and clinical social worker in Rochester. Over his 30-year career, Carlino says many patients have seen improvement in their illnesses, injuries and other pains once they begin to express their suppressed emotions.

It can be a distant disappointment from childhood or a recent and painful divorce. Carlino's primary aim is to help them find in what memories the pain is stored.

For the latter half of his career, Carlino has treated veterans for post-traumatic stress disorder, depression, anger management, and drug and alcohol problems. One of his most memorable patient experiences was a Vietnam vet whose arm was

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paralyzed. He kept going to doctors, Carlino remembers, but they could find nothing wrong.

During an intense session, Carlino had the patient address his arm as if it were another person in the room. It was in that session that they were able to uncover the reason for the paralysis.

"I interviewed him in the role of his arm and then had him speak to his arm role reversing him back to himself," Carlino recalls. "I can't say all the things that I did during that session. The bottom line is that he sobbed and sobbed because (we discovered) that was the arm that had killed families and children." Shortly afterwards, the patient returned to tell Carlino he had regained movement in that arm.

EMOTIONAL BLOCKAGES 🌻

"The psyche will hang on to stuff when you think you're not. People don't really know the emotional baggage, if you will, that they're carrying," Carlino says.

Many times the emotional baggage is some variety of anger or sadness from a situation in which the person felt disrespected. It's usually about a relationship and a distorted perception, Carlino says. The medical problems usually begin when the emotions associated with those perceptions or judgments go unexpressed.

"Once I see someone expressing something they've been holding on to, it's like an onion, there's always more, but once they begin to let some of that go and begin to have some internal peace about it, their whole body begins to change, their whole body begins to heal," Carlino says. "We really can heal ourselves if someone can facilitate that healing."

Pert, who explained how emotional memory is stored in the body's peptide and receptor network, wrote that unexpressed emotions get lodged in the body; one way to prevent that is to express feelings as they bubble up.

Pert wrote that when you allow yourself to feel, the body's efficient and natural healing intelligence can proceed uninterrupted. Once feelings are integrated, she wrote, the natural wisdom of the receptors will be restored and regenerative processes can take over.

"By simply acknowledging emotions, they are expressed. In being expressed, emotions can be released, even old emotions stored in body memory. Allowing my emotions to surface into awareness and to be able to name my emotions is the beginning of emotional exploration."

Susan Krasner tries to facilitate physical healing through emotional integration using a healing modality from Jewish mysticism. She has a Kabbalistic healing practice in Brighton where she tries to help patients

accept reality as it is, with its imperfections and suffering, as a way to stop suppressing or projecting unpleasant feelings.

In addition to the health problems it poses, denying emotions, she says, separates people from themselves, from others, and ultimately from reality. "We cut off from certain feelings because we are taught not to feel them, and a judgment value is placed on those feelings, especially the ones we identify with as bad or negative. Much of this cutting off of feelings occurs in childhood, when we needed to protect ourselves in this way," Krasner says.

It's a coping mechanism that many people carry into adulthood, she says. But in avoiding reality, she adds, people ultimately intensify their suffering and push it onto other people.

"When we push our suffering away, we create a second kind of layer of suffering that often serves to pass along this pain while this instinctive agenda only sinks us deeper into the problem we are trying to avoid," Krasner explains.

Dale Goldstein, a clinical social worker and psychotherapist, also combines spirituality in his practice. Feelings that are too intense, he says, frequently get walled off from our consciousness, but so do feelings that are socially unacceptable.

"Anger is not a socially acceptable emotion for women, and for men, (it's acceptable) only at sporting events and circumstances that require protecting oneself, family, social group, or country," Goldstein says. "Fear is not socially acceptable—period—and sadness or grief is more acceptable for women than men."

The idea that boys don't cry is a powerful example, Carlino says. Grown men pay dearly for that belief. "Men do die earlier, and I think it is the unexpressed emotions because it wasn't safe for a little boy to cry," Carlino says.

SILENCE, AWARENESS, ACCEPTANCE 🌻

If there's one universally helpful way to maintain good health, Wise says, it's through silence because that's when people can go inside themselves. When people are afraid of silence, as they often are, Wise says it is an important sign that there is an underlying emotional blockage.

"When you let those things in the nooks and crannies of your subconscious without bringing them out into the light, then they affect you more than you realize," Wise says.

Awareness of one's emotions and thoughts and how they are affecting the body, experts say, is essential but not necessarily easy. To that end, RIT's Sugarman uses biofeedback to show people in real time

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how their thoughts, feelings, and experiences affect their physiology.

Biofeedback uses electronic monitoring of automatic bodily functions so that people can develop an awareness and subsequently, some control over those functions. “We can give people feedback about how they’re changing their heart rate, their brain activity, how their fight-or-flight response is changing in real time using computerized biofeedback.”

If thoughts are recurring and negative and producing anxiety, Sugarman shows how people can change their internal experience to return to calm. It’s not about changing thoughts, he says. It’s about experiencing—imagining a pleasurable, happy and vivid experience, which by engaging the senses, helps to return the body to homeostasis without trying to think our way there.

“Experiencing is: You’re on a beach in Hawaii; the colors of the sunset and the smell of those amazing flowers blowing in the offshore breeze as the sun goes down. That’s not thinking. That’s feeling it. Thinking and concentrating are part of the problem.

“That’s why there is such a move towards mindfulness meditation, which is stopping those processes and stepping away from—not really stopping them. Stepping away, observing, noticing, not judging,” Sugarman says. “It’s being without thinking, without the criticism and the processing.”

For Shrivastava, positive thoughts, she says, can counter the harmful effects of negative thoughts. Thoughts of gratitude and forgiveness—three positive thoughts for every negative thought, she says—can help halt the stressful thought patterns and their destructive consequences.

FORGIVENESS 🌻

In recent years, forgiveness and its effects on health have become the subject of increasing scientific research, such as how the trait or state of forgiveness leads to better overall physical health and lower mortality rates. Evidence so far suggests that fewer stress perceptions may help explain why forgiveness is related to good health.

“When we show generosity, be grateful, and forgive, we generate positive emotions and over time become more resilient in the face of adverse situations,” Shrivastava says.

Wise says that it doesn’t matter what you tell yourself if your underlying beliefs contradict the message.

“It’s not even just thoughts. It’s really the emotions that go with the thoughts,” Wise says. “You can do affirmations, positive affirmations until you are blue in the face. They may help you a little bit, but if you have some underlying beliefs that are giving you some emotional feedback to your body that are different from the affirmations, your body is going to be believing those underlying beliefs.

“You really have to find out what the underlying beliefs are, and change those. That’s what changes the physiology,” Wise says.

Krasner says when she entered school to study healing she was in denial of her anxiety and how it affected her identity.

“Having suffered abuse as a child, I developed coping mechanisms mostly in the form of competitive sports,” Krasner says. Sports helped her identify with the strong part of herself, she remembers, and overlook the parts of her that suffered as a child.

“It wasn’t until years later, when I experienced a number of painful personal crises while simultaneously experiencing debilitating migraines, that I was led to work that brought me into a deeper relationship with what was going on,” Krasner says. “I was led to do deep healing work around childhood trauma and repressed rage, which is common among children who experience abuse.

“I began to experience and understand a whole new world that lived inside me,” she says. Facing the trauma and letting go of her denial, Krasner says, helped her find peace.

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